



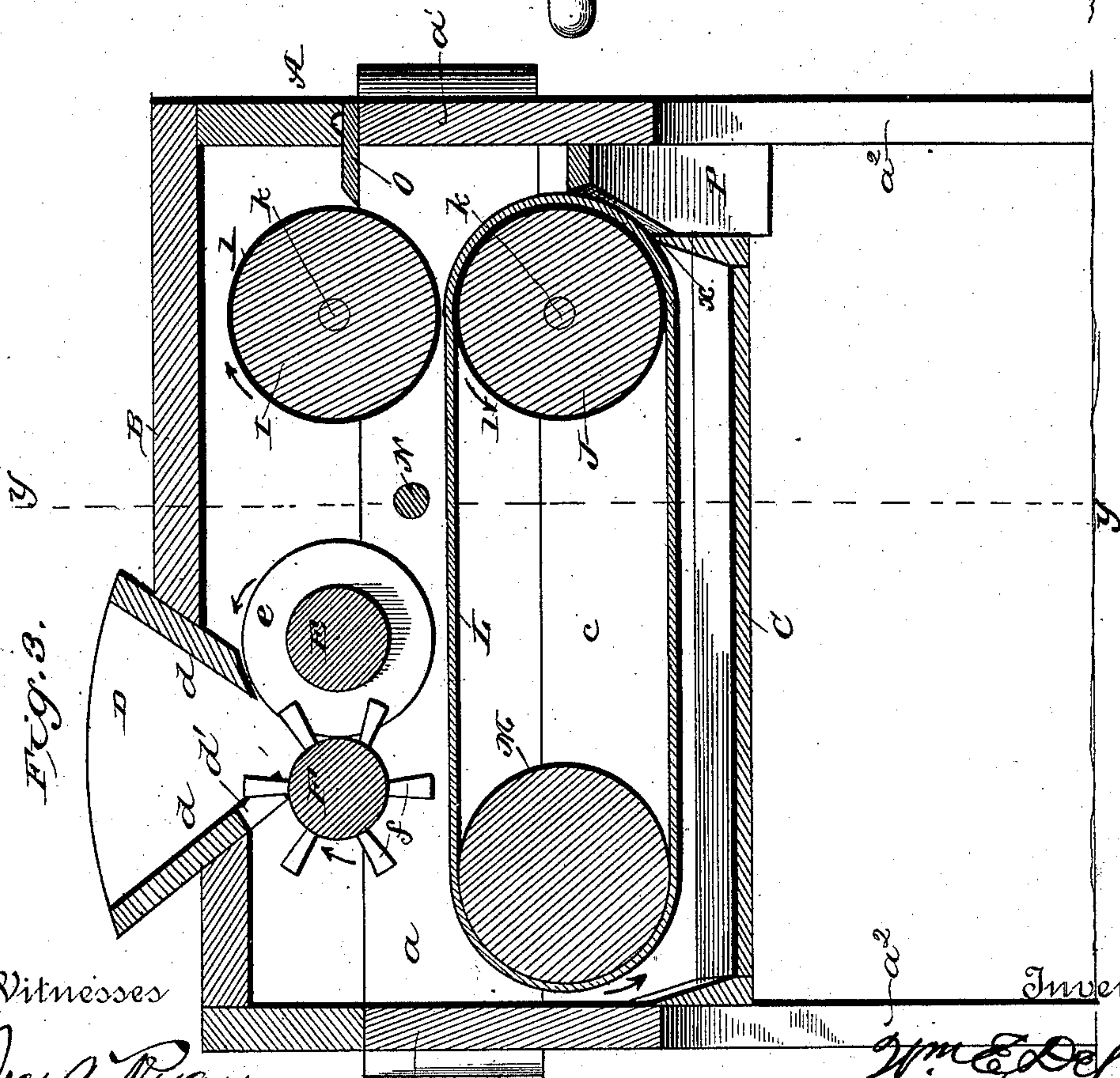
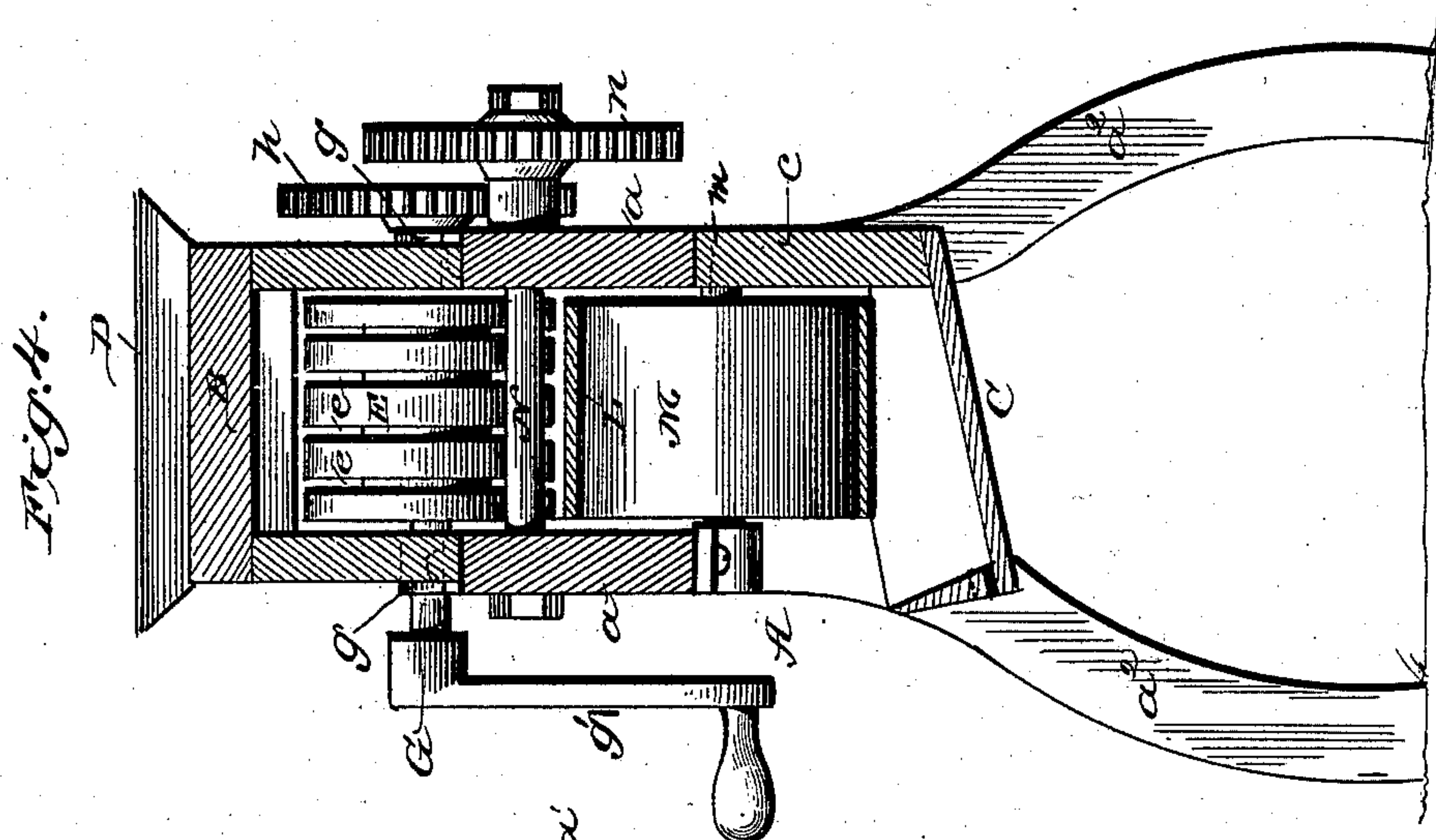
(No Model.)

2 Sheets—Sheet 2.

W. E. DEPP.  
CIDER OR WINE MILL.

No. 365,976.

Patented July 5, 1887



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM E. DEPP, OF BROOKVILLE, PENNSYLVANIA.

## CIDER OR WINE MILL.

SPECIFICATION forming part of Letters Patent No. 365,976, dated July 5, 1887.

Application filed April 22, 1887. Serial No. 235,798. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. DEPP, a citizen of the United States, residing at Brookville, in the county of Jefferson and State of Pennsylvania, have invented a new and useful Improvement in Cider or Wine Mills, of which the following is a specification.

My invention relates to improvements in cider or wine mills; and it consists of the peculiar combination of devices and novel construction and arrangement of the various parts for service, substantially as hereinafter fully described, and particularly pointed out in the claims.

The object of my invention is to provide an improved cider or wine mill with improved mechanism for reducing the fruit or other substance that is fed to the hopper to a pulp, to provide mechanism for compressing the pulp after its reduction by the crushing-rollers, so as to extract all of the juicy matters from the pulp, and to provide mechanism for clearing the pressure-rollers of any adhering pulp and for discharging the pulp out of the machine separately from the juice extracted from the pulp.

My improved cider or wine mill is very simple and strong in construction, effective and reliable in operation, as well as easily and cheaply constructed.

In the accompanying drawings, which illustrate a cider or wine mill embodying my improvements, Figure 1 is a top plan view. Fig. 2 is an elevation taken from one side of the machine. Fig. 3 is a vertical central sectional view taken longitudinally through the machine on the line  $x x$  of Fig. 1. Fig. 4 is a vertical transverse sectional view on the line  $y y$  of Fig. 3. Fig. 5 is a detail view of one of the rotary crushing-rollers.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the frame of my improved machine or mill for reducing and extracting the juice from different kinds of fruit or other substances in the manufacture of cider, wine, and sugar. The frame preferably consists of the parallel sides  $a$ , which are firmly united and connected together at their ends by transverse pieces  $a'$ , the whole of which is rigidly secured together by suitable

devices. The frame has the bearings for the shafts of the various pressure, crushing, and supporting rollers affixed thereto at the upper and lower edges, and over the said rollers is placed a cover, B, which rests upon the upper edges of the sides and ends of the frame. This cover is removably fitted on the frame, so that it can be detached to permit of an inspection of the mechanism of the mill. The frame is supported at a suitable height above the ground or floor by means of legs or standards  $a^2$ , which are rigidly connected thereto, the said legs being preferably formed integral with the ends of the frame.

An inclined trough, C, is arranged beneath the open frame, to receive the juice falling from the crushing and pressure rollers of the mill. One end (the upper) is connected with the frame by means of a vertical wall or partition,  $c$ , which joins one of the sides of the frame, and one end of the trough is connected to one end of the frame and the legs at that end, as shown, while the opposite end of the trough is arranged out of contact with the opposite end of the frame, so as to leave an intermediate space. The lower side and end edges of inclined trough are provided with vertical walls, which prevent the escape of the juice falling thereon, and the vertical wall at the lower edge of the trough has a transverse opening, as shown in Fig. 3, through which the juice is free to escape into a suitable receptacle provided therefor.

The removable cover B of the mill is provided with a hopper, D, which comprises the inclined converging sides  $d$ , which are extended beneath the upper wall of the cover, so as to properly direct the contents of the hopper between the crushing-rollers, the lower extended edge of one of the sides  $d$  of the hopper being provided with a series of notches or slots,  $d'$ , for the free passage therethrough of the knives on one of the crushing-rollers, as will be presently described.

E F designate the crushing-rollers, which are arranged between the parallel sides of the frame, near one end thereof, and these rollers meet or come in contact with one another at their peripheries, as shown in Fig. 3 of the drawings. The said crushing-rollers are arranged immediately beneath the lower



terminal ends of the sides of the hopper, so that the contents of the latter is directed upon the crushing-rollers at the line where they meet one another. The crushing-roller E is made larger in diameter than the roller F, and the said larger roller is provided with a series of annular grooves, *e*, which are formed in its periphery and arranged equidistant from one another. The smaller crushing-roller is provided with a series of radial cutters or blades, *f*, which project beyond the periphery of the same, and these cutters are rigidly affixed in the said roller and are arranged out of line with each other longitudinally of the roller. The rollers are rigidly affixed upon and secured to suitable shafts, *G*, which are journaled in bearings *g*, that are rigidly affixed to the frame *A*. One end of the shaft of the crushing-roller *F* is extended beyond one of its bearings and provided with a crank or handle, *g'*, to rotate the machine by hand, and the opposite end of the said shaft has a small gear-pinion, *g''*, rigidly affixed thereon, which pinion meshes with and rotates a large gear-wheel, *h*, that is rigidly affixed to one end of the shaft of the large crushing-roller *E*. The crushing-rollers are thus geared together for simultaneous operation, and they rotate toward one another in different planes.

*I* *J* designate the pressure-rollers, which are arranged at the opposite end of the machine to the crushing-rollers. These rollers are arranged one beneath the other, the upper roller, *I*, being arranged in substantially the same horizontal plane as the crushing-rollers *E* *F*, which latter rollers are arranged in substantially the same horizontal plane. The pressure-rollers are carried by suitable shafts, *k*, which are journaled in bearings that are affixed to the upper and lower edges of the sides of the frame *A*, and one end of these shafts is extended beyond the frame *A* and provided with gear-wheels *k'*, as shown, which mesh with each other, so that the rollers are rotated in opposite directions. The periphery of each of the rollers is covered with rubber or other elastic substance, as at *l*, and between these rollers passes a traveling carrier-belt, *L*, which is arranged in a horizontal position. This endless carrier-belt is arranged to travel longitudinally of the frame *A* of the mill, and it is arranged beneath the crushing-rollers to receive the pulp therefrom to convey it to the pressure-rollers. One end of the endless carrier-belt passes over and is supported by the lower pressure-roller, *J*, and the opposite end of the said carrier passes over and is supported by another roller or drum, *M*, which is arranged at the same end of the mill as the crushing-rollers, this roller or drum being arranged below the plane of the crushing-rollers and in front of the same. The roller *M* is carried by a suitable shaft, *m*, which is journaled in bearings that are rigidly affixed to the frame of the mill. The pressure-rollers are positively driven or rotated by motion transmitted thereto through a

counter-shaft, *N*, which is arranged in a horizontal position transversely of the frame between the crushing and pressure rollers of the mill. One end of this shaft is provided with a large gear-wheel, *n*, which meshes with a small pinion, *n'*, that is rigidly affixed on the shaft of the crushing-roller *E*, and the said gear-wheel on the counter-shaft also meshes with the gear-wheel on the shaft of the upper pressure-roller, *I*, whereby the motion of the crushing-rollers is transmitted through the intermediate counter-shaft to the pressure-rollers, which in turn actuate the traveling carrier-belt, the drum or roller *M* serving as an idler roller or drum for the support of one end of the carrier-belt.

*O* designates a scraper or blade, which is affixed to one of the ends of the frames by any suitable devices, and one edge of the scraper is arranged in close proximity to the upper pressure-roller, *I*, of the mill, so as to clear the latter from any adhering matter or pulp. The pulp cleared from the upper pressure-roller by the fixed clearing-blade falls through the space between one of the ends of the frame and the upper pressure-roller and falls upon an inclined discharge-board, *P*, which is rigidly affixed or secured in the frame at the end thereof, immediately beneath the fixed scraper or blade. This discharge-board is inclined in the reverse direction to the trough *C*, and the inner edge thereof is arranged in close proximity to the surface of the traveling carrier-belt as it passes over the lower pressure-roller, *J*, as shown at *x*, so as to scrape the pulp or other matter therefrom and discharge the same from the machine.

This being the construction of my improved mill the operation thereof is as follows: The fruit or other matter from which the juice is to be extracted is placed in the hopper of the mill and fed between the meeting surfaces of the crushing-rollers. The handle or crank is now seized and rotated by the operator to revolve the various rollers of the machine and cause the carrier-belt to travel from one end of the machine to the other. The radial cutters or blades on the smaller crushing-roller pass through the contents of the hopper and the notches or slots in the lower edge of one of the sides thereof to reduce and cut up the fruit or other contents of the hopper, which, when they have been cut up to the required extent, escape from the pressure-rollers through the annular circumferential channels in the large crushing-roller *E*, the radial cutters or knives also working in the said annular channels in the large crushing-roller. The pulp that falls from the crushing-rollers drops upon the traveling carrier-belt, which conveys it to the opposite end of the machine between the pressure-rollers, which exert a powerful pressure on the pulp to effectually extract all the juicy matters from the pulp. The juice from the pulp falls into and is collected by the inclined trough, and the juice is then discharged into suitable re-



ceptacles placed beneath the outlet-opening in the trough. The pulp, after it has been compressed and the juice extracted therefrom, is scraped from the pressure-rollers and the belt by the action of the scraper O and the inclined discharge-board P, from the latter of which the pulp is discharged from the machine at the side thereof opposite to the side from which the extracted juice is discharged. It will thus be seen that the operations of reducing the fruit to a pulp, conveying it to the pressure-rollers and compressing it, and of discharging the extracted juice and the refuse pulp are all carried on automatically, it only being necessary to turn the crank or handle of the mill and feed the fruit to the hopper.

I desire to state that while I believe the mechanism hereinbefore described and illustrated in the accompanying drawings as best adapted for carrying my invention into practice, still I reserve the right to make such changes and modifications therein as fairly fall within the principle or scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cider and wine mill, the combination of the rotary crushing-rollers, one of said rollers having a series of annular channels in its periphery and the other roller having the radial blades adapted to work in the said channels, the pressure-rollers arranged one beneath the other, and a carrier-belt intermediate the crushing and pressure rollers to convey the pulp from one set of rollers to the other, substantially as described.

2. In a cider and wine mill, the combina-

tion of the roller E, having a series of annular channels, the roller F, having the radial blades, the roller I, arranged in the same horizontal plane as the roller E, the roller J, the belt L, the idler or drum M, the counter-shaft N, and the scraper P, substantially as described.

3. In a cider and wine mill, the combination of a hopper, a pair of crushing-rollers, pressure-rollers arranged one beneath the other, the traveling carrier-belt intermediate of the crushing and pressure rollers, a fixed scraper arranged in close proximity to the periphery of the upper pressure-roller, and an inclined discharge-board arranged beneath the scraper and in close proximity to the traveling belt as it passes over the lower pressure-roller, substantially as described, for the purpose set forth.

4. In a cider and wine mill, the combination of a hopper, a pair of crushing-rollers, the pressure-rollers arranged one beneath the other, an idler drum or roller, a traveling belt arranged beneath the crushing-rollers and passing over the idler-drum and the lower pressure-roller, the inclined trough arranged beneath the traveling belt, a fixed scraper arranged in close proximity to the upper pressure-roller, and a discharge-board inclined in the reverse direction to the trough and beneath the scraper or blade, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM E. DEPP.

Witnesses:

H. W. MUNDORFF,  
S. CHAMBERS.